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(72) Applicant: Deutsche Bundespost Telekom, D-53175 Bonn.

Inventor: Werner Simon

(56) The following documents were taken into consideration for the determination of patentability:

EP 05 19 253 A2

EP 04 11 698 A2

JP-4-302565 A., in "Patents' Abstracts of Japan". E - 1333, March 18, 1993, vol 17, # 128;

[Title in German of the object of the invention:]

Verfahren und Vorrichtung zur Kommunikationsverbindung eines Personal Computers mit einem Fernkopierer

METHOD AND DEVICE FOR THE COMMUNICATIONS LINK OF A PERSONAL COMPUTER TO A FACSIMILE

(57) [Abstract published in German by the German PTO:]

"In order for any facsimile (fax-unit) to be used as printer for personal computers, there are necessary interposed communication networks, besides the data-transfer hard- and software in the PC,

which are generally common in the meantime. Should the interposing or interfacing of the communication networks be avoided, separate interfaces are required on the facsimile.

A direct connection of the personal computer to an arbitrary facsimile is made possible, while the personal computer itself generates and transmits the relevant procedures for the setting up of a link - which otherwise are generated by the telecommunications network - and, therewith, alerts the facsimile to accept the communication. Hard- and software components of the personal computer are used as suitable devices, which components are additionally outfitted with the network-specific handshaking-procedures of one , or more communication networks.

The method provides an opportunity - in particular in the case of portable PC (laptops) - for the use of facsimiles as printers."

Description

The invention pertains to a method for the communications link of a personal computer to a facsimile, pursuant to the preamble of patent claim 1, as well as to a device for the carrying out of the method, pursuant to the preamble of patent claim 2. Communication-link possibilities are known from various companies' publications.

Arbitrary personal computers can be connected to one another, and also to facsimiles, by means of modems and telecommunications networks.

Frequently, personal computers are also outfitted with data-transfer devices in the form of hard- and software components, which provide an opportunity for a direct communication of the personal computer to a facsimile via the telecommunications network.

The standard case of those communication consists in that the personal computer - in its capacity as data terminal - is directly connected to the telecommunications network, and in case of necessity - establishes a link for the connection of the facsimile by means of this network, by using the network-specific protocols, and after the handling or execution of the hand-shaking procedure, communicates with the facsimile (Fig. 1).

It is also known that facsimiles are provided with interfaces for a direct communication with the personal computer (see: "Die neue Fax-Ära [The New Fax-era]: Das Multivalent von Siemens" Personal-Fax 550, INNOVATION & MANAGEMENT, 3/93 p 59).

In the case of that device, the printer can respond (functions in response) by means of the parallel port of the conventional interfaces of any computer, while the scanner and the fax-modem can respond by means of the serial port of the conventional interfaces of any personal computer.

By means of the additional direct links between that facsimile - which is specially equipped, and is connected to the telecommunications network - and the personal computer, the individual elements printer, scanner and fax-modem of that special facsimile become directly usable for any arbitrary connected personal computer.

In order for a link to be materialized to another facsimile, which is not specially outfitted in such a way, a link should be set up by means of fax-modem and the telecommunications network, even when the facsimile is located on the same site.

The known hard- and software-components for personal computers are designed for the communication with various kinds of telecommunications networks. They do not allow a direct communication with a facsimile, without using the networks, because each facsimile expects the relevant protocols of the network (e.g., incoming call) at its interface to the telecommunication network, prior to the initiation of the communication.

The object of the invention is to create a possibility for a direct communication between a personal computer and an arbitrary

facsimile without recourse to a telecommunications network. In particular, portable personal computers (laptops) should also get the opportunity to use as printers the abundantly existing facsimiles of any kind, without a need to link both devices via a telecommunications network.

The persisting problem is resolved by the method, cited in the characteristic part of patent claim 1.

A device, which is suitable for the carrying out of this method, is explained in the characteristic part of claim 2.

By means of an exemplified embodiment, the invention is elucidated in greater detail as follows. The corresponding drawing shows in

Fig. 1 - the generally known type of link,

Fig. 2 - the known direct link, and in

Fig. 3 - a link in accordance with the invention.

The known data-transfer hard- and software components, cited in Fig. 1 in the case of a personal computer, PC, are designed for the communication with the different types of telecommunications networks, KN* [*Translator's note: The abbreviation KN in German stands for the German word 'das Koppelnetz', which means 'switching network (switching matrix)']. They do not allow the direct communication with a facsimile, FK [*Translator's note: FK stands for the German word 'Fernkopierer' i.e. facsimile], because the latter, in its turn, expects the relevant protocols of the network, e.g., incoming call, for the purposes of an initiation of the

communication.

The known solution, diagrammatically represented in Fig. 2, requires a special embodiment of the facsimile, FK, should have a parallel interface for the link of the printer to the parallel port of the personal computer, PC, and a serial interface for the link of the scanner and fax-modem to the serial PC-port.

In accordance with the communications link in conformity with the invention, which link is diagrammatically represented in Fig. 3, the possibility is created to undertake a direct communication by way of a single, serial link between a personal computer, PC, and a facsimile, FK, without the aid of a telecommunications network. To this end, hard- and software components of the personal computer, PC, which are being used for the communication to the networks, are additionally equipped with the specific handshaking procedures of the network/networks.

The direct (interface) connection or link of the facsimile, FK, takes place at the interface - provided on the personal computer for the purposes of an interconnection to the telecommunications network - by using the conventional interconnection technique or design (in Germany: TAE*)

[*Translator's note: The inventor has not expanded the abbreviation or acronym TAE. It could stand for the German words: 1. "Telekommunikations-Anschluß-Einheit" i.e. telecommunication line unit" (TLU); or 2. for "Teilnehmer-Anschluß-Einheit", i.e. subscriber line unit], and by simulating [or balancing] the elements, necessary for the communication with a facsimile, and

the procedures of the telecommunications network in the personal computer, PC. Mostly, those are described in the relevant valid Admission [Authorization] Conditions (e.g., at present, in Germany, 1 DR* 2) [*Translator's note: The abbreviation DR is not expanded by the inventor]:

- d.c. current conditions of the network,
- call-conditions of the network, and
- protocol handling or execution, as required for the establishing up of an incoming link to a facsimile (in particular, the dispatching of the call into the network-relevant sequences).

With the help of the invention, the opportunity is thus provided for portable personal computers (PC) to also utilize the abundantly existing conventional facsimiles, FK, as printers for the personal computer, PC, without a need to link both devices via a telecommunications network. The link of such a PC, e.g., laptop, to a facsimile, FK, can advantageously take place by means of the two N*-connections of TAE-NFN** junction or connection box [wall socket].

[*Translator's note: The abbreviation N is not expanded. It could mean 'neutral']

[**Translator's note: The inventor has not disclosed what the abbreviation NFN stands for. It could be: 1. low-frequency network; 2. Normalfrequenz = i.e. standard frequency network; or, perhaps, 3. audio-frequency network.]

PATENT CLAIMS:

1. Method for communications link of a personal computer (PC) to data-transfer device, having a facsimile, **characterized in that** the personal computer itself generates and emits or dispatches the relevant procedures - which are otherwise generated by the telecommunications network - for the setting up of a link, and therewith, alerts or activates the facsimile to accept the communication.

2. Device for the communications link of a personal computer to data-transfer device, having a facsimile, characterized in that the hard- and software components of the personal computer, which are being used for the communication with networks, are additionally outfitted with the network-specific handshaking procedures of a network, or, more networks.

1 page of drawings

Translator's notes;

The inscriptions in the drawings are as follows:

Fig. 1:

- PC mit Datenübertr. -Hard- u. Softw. = PC, having data-transfer Hard- and Software
- KN =switching network
- FK = facsimile

Fig. 2:

- Drucker = printer

Fig. 3:

- PC mit netzspezif. Prozeduren, Hard- u. Softw. = PC, having network-specific procedures, hard- and software.

USDoC/USPTO/STIC/Translations Branch
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USPTO Translator (GERMAN and the principal Germanic languages)
January 8, 2004

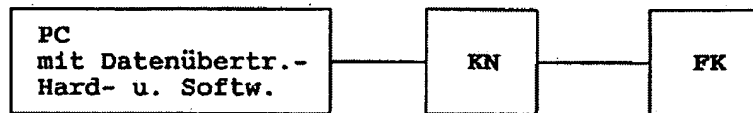


Fig. 1

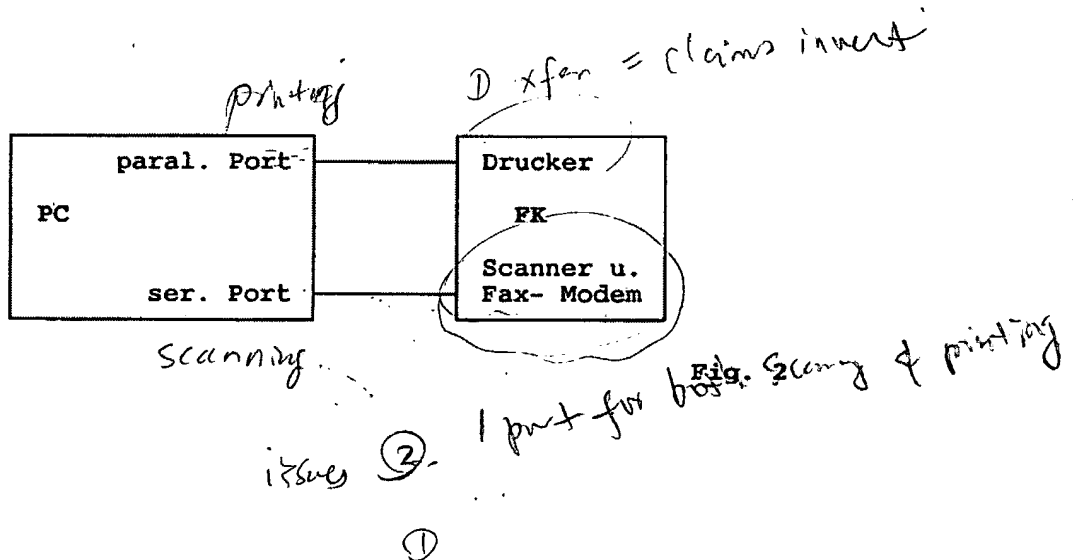
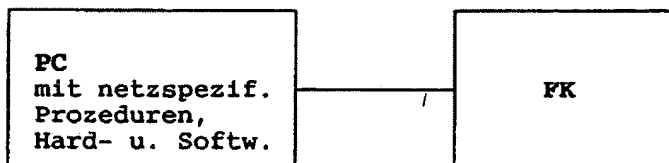


Fig. 3



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Applicant:
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EP 05 19 253 A2
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JP 4-302565 A., In: Patent Abstracts
of Japan, E-1333, March 18, 2993,
Vol. 17, No. 128

Connecting Portable Personal Computer and Facsimile Apparatus to Provide Direct
Communication Link - Using PC to Generate Network Hand-Shaking Procedures for Making
Connection with Facsimile

Abstract:

A communication link is established between a personal computer and a facsimile copier without involving additional network considerations. The PC system has built-in network specific hardware and software procedures that allow a direction connection to be established with the copier. The system also allows a direction connection between a PC and a copier without involving the communication network. The FAX copier can serve as a printer for lap-top computers.

Meanings of abbreviations:

FK = facsimile

TAE NFN = connection circuit outlet

TAE = TLU (telecommunication line unit)

TAE-Anschlußdose = Telecommunication socket

NF = audio frequency or low frequency channel

Column 1, line 3:

The invention pertains to a method for the communication connection of a personal computer PC to a facsimile apparatus pursuant to the preamble of claim 1, as well as to a device for the carrying out of the method in conformity with the preamble of claim 2. Such communication-connection possibilities are known from various companies' publications.

Any PC can be connected by means of MODEM and telecommunication networks to one another and also to a facsimile device.

In many occasions, PCS are also equipped with data transfer devices in the form of hard- and software components, which provide an opportunity for direct communication of the PC to a facsimile device via the telecommunication network. The usual case of this communication consists in that the PC in its capacity as a terminal equipment is directly connected to the telecommunication network, and, if necessary, a connection for the connecting of the facsimile device is built up by means of this network by using the network specific protocol, and after handling (serving) of the hand-shaking procedure, [the PC] communicates with the facsimile device (Fig. 1).

It's also known that facsimiles are provided with interfaces for a direct connection with a PC (the new Fax-Ara: the multivalent of Siemens, Personal-Fax 550, INNOVATION & MANAGEMENT 3/93, Page 59).

In the case of that device, the printer can respond by means of the parallel port, and the scanner and the fax MODEM can respond by means of the serial port of the conventional interfaces of any PC.

By means of the direct connections between this facsimile - which is specially equipped, and connected to the telecommunication network - and the PC, the individual elements, namely, printer, scanner and fax MODEM of this special facsimile become directly usable for any connected PC.

In doing so, for the purpose of a connection to another facsimile, which is not specially equipped in such a way, a connection must also be made by means of the fax MODEM and by means of the telecommunication network, even when the facsimile is located in the same site or spot.

The known hard-and-software components for PCS are designed for the communication with the different kinds of telecommunication networks. They do not allow (any) direct communication with a facsimile without using the network, because each facsimile awaits (anticipates) the relevant protocol of the network (e.g., incoming call) where at each interface to the telecommunication network when prior to the initiation of the communication. Column 1, line 56.

Column 1, line 57:

The object of the invention is to create a possibility for a direct communication between a PC and any facsimile device without the aid of a telecommunication network. In particular, portable PC (lap-tops) should get the possibility to use the commonly (frequently) existing facsimile of any kind as printers, without a need to connect the two device by means of a telecommunication network.

Column 1, line 67:

The existing problem is resolved by means by the method which is mentioned in the characteristic part of claim 1.

Column 2, line 2:

a device suitable for carrying this method is represented in the characterized part of claim 2.

The invention is elucidated in greater detail as follows:
The drawing shows in

Fig. 1, the general known type of connection,
Fig. 2, a known direct connection, and in
Fig. 3, a connection in accordance with the invention.

The known data transfer hard-software components (Fig. 1) mentioned in the case of PC for the communication with the different kinds of telecommunication network KN (KN = KoppelNetz = switching matrix (switching network)) . They do not allow direct communication to facsimile FK, because the later one (FK) again expects -- for the purpose of initiation of a communication -- the respective protocols of the network, for example, an incoming call.

The known solution represented in Fig. 2 requires a special embodiment for the facsimile FK, which must have a parallel interface for the connection of the printer to the parallel port of the PC, and a serial interface of a scanner and fax-MODEM to the serial PC-port.

[The] communication connection according to the invention, represented in Fig. 3, creates the possibility to undertake a direct communication by means of a single, serial connection

between a PC and a facsimile FK without the aid of a telecommunication network. To this end, the hard-software components of the PC, which are used for the communication with networks, are additionally outfitted with the specific procedures of the network/networks.

The direct connection of the facsimile FK takes place at the interface provided in the PC for connection to the telecommunication network by using the conventional connection technique (TAE) (TAE - Anschlußdose = Telecommunication socket) and as a result of the balancing network (line building-out network) (simulating network or equivalent circuit) of the element necessary for the communication with a facsimile, and the procedures of the telecommunication network in the PC. These are mainly described in the valid connection admission conditions;

- DC-current conditions of the network,
- call conditions of the network,
- protocol serving (handling), which as the one which is required for the setting up of a communicating connection to a facsimile (in particular, the transmission of a call in the network-relevant sequences).

With the help of the invention, opportunity is in particular also provided for portable PC (lap-top) to use the frequently existing conventional facsimile FK as printer for the PC, without a necessity to connect both devices to communication network. The connection of such a PC (e.g., lap-tops, to a facsimile FK can advantageously take place by means of the two N-connections of a TAE-NFN connection socket outlet (wall socket or outlet). Column 2, line 64.

Claims

Claim 1:

Method for telecommunication connection of a PC with the help of data transfer device to a facsimile device, characterized in that:

the PC itself generates the relevant procedures, for the set-up of a connection, which otherwise are generated by the telecommunication network, and sends out/transmits and, therewith, activates the facsimile to receive the communication.

Claim 2:

Device for communication connection of a PC having data transfer device to a facsimile, characterized in that:

the hard-software components of PC, which are used for communication to the networks, are additionally outfitted to the network specific hand-shaking procedures of one, where appropriate, a multiple number of communication network.

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Communication Link - Using PC to Generate Network Hand-Shaking Procedures for Making
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Abstract:

A communication link is established between a personal computer and a facsimile copier without involving additional network considerations. The PC system has built-in network specific hardware and software procedures that allow a direction connection to be established with the copier. The system also allows a direction connection between a PC and a copier without involving the communication network. The FAX copier can serve as a printer for lap-top computers.



⑮ BUNDESREPUBLIK
DEUTSCHLAND



DEUTSCHES
PATENTAMT

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②③ Offenlegungstag: 20. 10. 94

Date of publ. of inv. pat. appl.
Inventor
Date of appl.

DE 43 12 136 A 1

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⑦② Erfinder: *Simon, Werner*
Simon, Werner, Dipl.-Ing., 6100 Darmstadt, DE

⑤⑥ Für die Beurteilung der Patentfähigkeit
in Betracht zu ziehende Druckschriften:

EP 05 19 253 A2
EP 04 11 898 A2
JP 4-302585 A., in: Patents Abstracts of Japan,
E-1333, March 18, 1993, Vol.17, No.128;

*The following documents
were taken into consider.
for the determinat. of
patentability*

⑤④ Verfahren und Vorrichtung zur Kommunikationsverbindung eines Personal Computers mit einem Fernkopierer

⑤⑦ Für die Nutzung eines beliebigen Fernkopierers (Fax-Gerä-
tes) als Drucker für Personal Computer sind, neben der
Inzwischen allgemein üblichen Datenübertragung Hand- und
Software im PC, zwischengeschaltete Nachrichtennetze
erforderlich. Soll deren Zwischenschalten vermieden wer-
den, sind besondere Schnittstellen am Fernkopierer erfor-
derlich.

Ein Direktanschluß des Personal Computers an beliebige
Fernkopierer wird ermöglicht, indem der Personal Computer
die ansonsten vom Telekommunikationsnetz generierten für
den Aufbau einer Verbindung relevanten Prozeduren selbst
erzeugt und aussendet und damit den Fernkopierer zur
Aufnahme der Kommunikation anreizt. Als geeignete Vor-
richtungen dienen Hand- und Software-Komponenten des
Personal Computers, die zusätzlich mit den netzspezifischen
Handshaking-Prozeduren eines bzw. mehrerer Kommunika-
tionsnetze ausgerüstet sind.

Das Verfahren ermöglicht insbesondere bei transportablen
PC (Laptop) die Verwendung von Fernkopierern als Drucker.

PC
mit netzspezif.
Prozeduren,
Hard- u. Softw.

FK

DE 43 12 136 A 1

Beschreibung

Die Erfindung betrifft ein Verfahren zur Kommunikationsverbindung eines Personal Computers mit einem Fernkopierer entsprechend dem Oberbegriff des Patentanspruches 1, sowie eine Vorrichtung zur Durchführung des Verfahrens entsprechend dem Oberbegriff des Patentanspruches 2. Derartige Kommunikationsverbindungs-Möglichkeiten sind aus diversen Firmenschriften bekannt.

Beliebige Personal Computer sind über Modems und Telekommunikationsnetze miteinander und auch mit Fernkopierern verbindbar.

Vielfach sind Personal Computer auch mit Datenübertragungseinrichtungen in Form von Hard- und Software-Komponenten ausgestattet, welche eine direkte Kommunikation des Personal Computers über das Telekommunikationsnetz mit einem Fernkopierer ermöglichen.

Der Regelfall dieser Kommunikation besteht darin, daß der Personal Computer als Endgerät direkt an das Telekommunikationsnetz angeschlossen wird und im Bedarfsfall über dieses Netz unter Benutzung der netzspezifischen Protokolle eine Verbindung zum Anschluß des Fernkopierers aufbaut und nach Abwicklung der Handshaking-Prozedur mit dem Fernkopierer kommuniziert (Fig. 1).

Es ist auch bekannt, Fernkopierer mit Schnittstellen für eine direkte Kommunikation mit dem Personal Computer zu versehen (Die neue Fax-Ara: Das Multivalent von Siemens, Personal-Fax 550, INNOVATION & MANAGEMENT 3/93 Seite 59).

Bei diesem Gerät kann der Drucker über den parallelen und der Scanner und das Fax-Modem über den seriellen Port der üblichen Schnittstellen beliebiger Personal Computer angesprochen werden.

Mittels der zusätzlichen Direktverbindungen zwischen diesem speziell ausgerüsteten und an das Telekommunikationsnetz angeschlossenen Fernkopierer und dem Personal Computer werden die Einzelelemente Drucker, Scanner und Fax-Modem dieses speziellen Fernkopierers für einen beliebigen angeschlossenen Personal Computer unmittelbar nutzbar.

Für eine Verbindung mit einem anderen nicht derart speziell ausgerüsteten Fernkopierer muß auch hierbei eine Verbindung über das Fax-Modem und das Telekommunikationsnetz hergestellt werden, selbst wenn er sich am selben Ort befindet.

Die bekannten Hard- und Software-Komponenten für Personal Computer sind für die Kommunikation mit den verschiedenen Arten von Telekommunikationsnetzen ausgelegt. Sie erlauben keine unmittelbare Kommunikation mit einem Fernkopierer ohne Nutzung des Netzes, weil jeder Fernkopierer an seiner Schnittstelle zum Telekommunikationsnetz vor der Einleitung der Kommunikation die jeweiligen Protokolle des Netzes (z. B. ankommenden Ruf) erwartet.

Die Aufgabe der Erfindung ist es, eine Möglichkeit zu einer direkten Kommunikation zwischen einem Personal Computer und einem beliebigen Fernkopierer ohne Zuhilfenahme eines Telekommunikationsnetzes zu schaffen. Insbesondere sollen auch transportable Personal Computer (Laptop) die Möglichkeit erhalten, die häufig vorhandenen Fernkopierer beliebiger Art als Drucker zu benutzen, ohne beide Geräte über ein Telekommunikationsnetz verbinden zu müssen.

Das bestehende Problem wird durch die im Kennzeichen des Patentanspruches 1 erwähnte Verfahrensweise

gelöst.

Eine zur Durchführung dieses Verfahrens geeignete Vorrichtung ist im Kennzeichen des Anspruchs 2 dargelegt.

Die Erfindung ist nachstehend anhand eines Ausführungsbeispiels näher erläutert. Die zugehörige Zeichnung zeigt in

Fig. 1 die allgemein bekannte Verbindungsart,

Fig. 2 die bekannte Direktverbindung und in

Fig. 3 eine Verbindung nach der Erfindung.

Die in Fig. 1 beim Personal Computer PC erwähnten bekannten Datenübertragungs-Hard- und Software-Komponenten sind ausgelegt für die Kommunikation mit den verschiedenen Arten von Telekommunikationsnetzen KN. Sie erlauben nicht die unmittelbare Kommunikation mit einem Fernkopierer FK, weil dieser wiederum zur Einleitung der Kommunikation die jeweiligen Protokolle des Netzes, z. B. ankommenden Ruf, erwartet.

Die in Fig. 2 dargestellte bekannte Lösung erfordert eine spezielle Ausführung des Fernkopierers FK, der eine parallele Schnittstelle für die Verbindung des Druckers mit dem parallelen Port des Personal Computers PC und eine serielle Schnittstelle für die Verbindung von Scanner und Fax-Modem mit dem seriellen PC-Port aufweisen muß.

Entsprechend der in Fig. 3 dargestellten Kommunikationsverbindung nach der Erfindung wird die Möglichkeit geschaffen, eine direkte Kommunikation über eine einzige serielle Verbindung zwischen einem Personal Computer PC und einem Fernkopierer FK ohne Zuhilfenahme eines Telekommunikationsnetzes vorzunehmen. Dazu werden die der Kommunikation mit Netzen dienenden Hard- und Software-Komponenten des Personal Computer PC zusätzlich mit den spezifischen Handshaking-Prozeduren des/der Netze ausgerüstet.

Die unmittelbare Anschaltung des Fernkopierers FK erfolgt an die zur Verbindung mit dem Telekommunikationsnetz am Personal Computer PC vorgesehene Schnittstelle unter Benutzung der üblichen Anschaltetechnik (in Deutschland: TAE) und durch Nachbilden der für die Kommunikation mit einem Fernkopierer notwendigen Elemente und Prozeduren des Telekommunikationsnetzes im Personal Computer PC. Dies sind in der Hauptsache die in der jeweils gültigen Zulassungsbedingungen (z. B. z.Z. in Deutschland 1 DR 2) beschrieben:

- Gleichstrombedingungen des Netzes,
- Rufbedingungen des Netzes und
- Protokollabwicklungen, wie sie zum Aufbau einer kommenden Verbindung zu einem Fernkopierer erforderlich sind (insbesondere das Aussenden des Rufs in den netzrelevanten Sequenzen).

Mit der Erfindung wird es insbesondere auch für transportable Personal Computer PC (Laptop) ermöglicht die häufig vorhandenen üblichen Fernkopierer FK als Drucker für den Personal Computer PC zu benutzen, ohne die beiden Geräte über ein Telekommunikationsnetz verbinden zu müssen. Die Verbindung eines solchen PC, z. B. Laptop, mit einem Fernkopierers FK kann vorteilhaft über die beiden N-Anschlüsse einer TAE-NFN-Anschlußdose erfolgen.

Patentansprüche

1. Verfahren zur Kommunikationsverbindung eines

Fax-Modem

Personal Computers (PC) mit Datenübertragungs-
einrichtung mit einem Fernkopierer, dadurch ge-
kennzeichnet, daß der Personal Computer die an-
sonsten vom Telekommunikationsnetz generierten
für den Aufbau einer Verbindung relevanten Pro-
zeduren selbst erzeugt und aussendet und damit
den Fernkopierer zur Aufnahme der Kommunika-
tion anreizt.

2. Vorrichtung zur Kommunikationsverbindung ei-
nes Personal Computers mit Datenübertragungs-
einrichtung mit einem Fernkopierer, dadurch ge-
kennzeichnet, daß die der Kommunikation mit Net-
zen dienenden Hand- und Software-Komponenten
des Personal Computers zusätzlich mit den netz-
spezifischen Handshaking-Prozeduren eines bzw.
mehrerer Kommunikationsnetze ausgerüstet sind.

Hierzu 1 Seite(n) Zeichnungen

20

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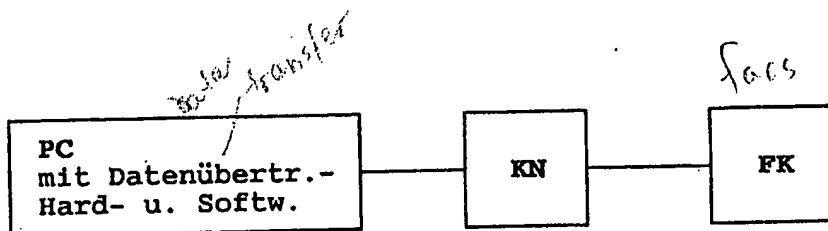


Fig. 1

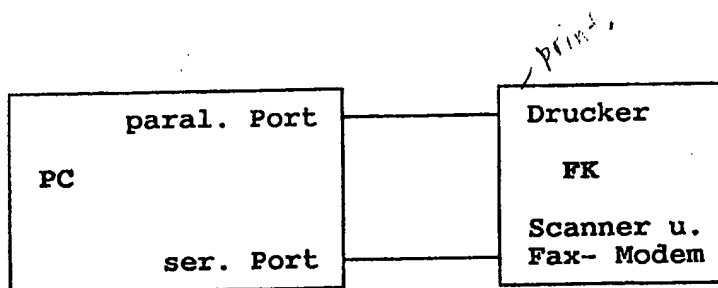


Fig. 2

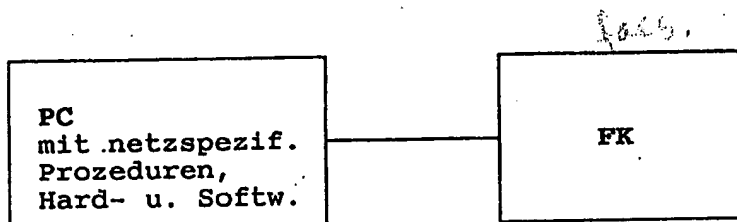


Fig. 3